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DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

CALIBRATION PROCEDURE FOR

PORTABLE HYDRAULIC SYSTEM TESTER

(GENERAL)

MIL-T-52585 (ME)

Headquarters, Department of the Army, Washington, DC
18 January 1985

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SECTION I

IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of Portable Hydraulic System Tester (General) MIL-T-52585 (ME). The manufacturer's manual was used as the prime data source in compiling these instructions. The equipment being calibrated will be referred to as the TI (test instrument) throughout this bulletin.

a. Model Variations. These instructions are applicable to all models that conform to MIL-T-52585 (ME).

b. Time and Technique. The time required for this calibration is approximately 3 hours, using the physical technique.

2. DA Form 2416 (Calibration Data Card)

a. Forms, records, and reports required for calibration personnel at all levels are prescribed by TB 750-25-1. DA Form 2416 must be annotated in accordance with TB 750-25-1 for each calibration performed.

3. Calibration Description. TI parameters and performance specifications which pertain to this calibration are listed in table 1.

Table 1. Calibration Description

Test instrument parameters	Performance specifications
Flow	Range: 0 to 100 gpm Accuracy: ±5% of reading
Pressure	Range: 0 to 6000 psi Accuracy: ±5% of reading
Temperature	Range: 20° to 240°F Accuracy: ±5% of reading

SECTION II

EQUIPMENT REQUIREMENTS

4. Equipment Required. Table 2 identifies the specific equipment to be used in this calibration procedure. This equipment is issued with Secondary Transfer Calibration Standards Set AN/GSM-286 and includes some limited deployed items. Alternate items may be used by the calibrating activity when the equipment listed in table 2 is not available. The items selected must be verified to perform satisfactorily prior to use and must bear evidence of current calibration. The equipment must meet or exceed the minimum use specifications listed in table 2. The accuracies listed in table 2 provide a four-to-one ratio between the standard and TI.

5. Accessories Required. The accessories listed in table 3 are issued as indicated in paragraph 4 above and are used in this calibration procedure. When necessary, these items may be substituted by equivalent items, unless specifically prohibited.

Table 2. Minimum Specifications of Equipment Required

Item	Common name	Minimum use specifications	Manufacturer and model (part number)
A1	FLOW RATE METER[1]	Range: 0 to 50 gpm Accuracy: ±.35% of reading	Flow Technology, Inc., (MIS-10391)
A2	PRESSURE GAGE TESTER	Range: 0 to 5000 psi Accuracy: ±0.5% FS	Mansfield and Green, Model 10-10525 (8598963)
A3	THERMOMETER	Range: 31 to 260°F Accuracy: ±1°F	Instrulab, Inc., Type 4100 (7915890)

[1]Limited deployed item.

Table 3. Accessories Required

Item	Common name	Description (part number)
B1	CLEAN WATER	1 gallon
B2	CONTAINER	4-in. diameter and at least 8-in. deep, able to withstand 212°F
B3	ELECTRIC HOT PLATE	W-H-636 TYISTISZ
B4	FLOW SOURCE	0 to 50 gpm (furnished by using unit)

SECTION III

CALIBRATION PROCESS

6. Preliminary Instructions

a. The instructions outlined in paragraphs 6 and 7 are preparatory to the calibration process. Personnel should become familiar with the entire bulletin before beginning the calibration.

b. Items of equipment used in this procedure are referenced within the text by common name and item identification number as listed in tables 2 and 3. For the identification of equipment referenced by item numbers prefixed with A, see table 2, and for prefix B, see table 3.

NOTE

Unless otherwise specified, verify the result of each test and, whenever the test requirement is not met, take corrective action before continuing with the calibration. Additional maintenance information is contained in the manufacturer's manual and TM 9-4940-468-14 for this TI.

NOTE

Unless otherwise specified, all controls and control settings refer to the TI.

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7. Equipment Setup

a. Remove protective cover from TI.

b. Fill container (B2) with clean water (B1).

c. Place container on electric hot plate (B3) and apply 115 V ac power to electric hot plate.

CAUTION

Keep electric hot plate at least 3 feet from TI.

8. Temperature Gage

a. Performance Check

(1) Remove TI temperature gage, wipe with a clean, dry cloth and place gage in a location for comparison with probe of thermometer (A3).

(2) Allow TI temperature gage to stabilize for at least 10 minutes at ambient temperature.

(3) Compare ambient temperature indicated on thermometer with temperature indicated on TI temperature gage.

(4) TI temperature gage will indicate within +5 percent of thermometer probe.

(5) Assure that vapor is rising from water.

(6) Remove container (B2) from electric hot plate (B3).

(7) Place thermometer probe and probe of TI temperature gage into container.

(8) After approximately 3 minutes, compare temperature indications.

(9) TI temperature gage will indicate within +5 percent of thermometer.

(10) Replace TI temperature gage.

b. Adjustments. No adjustments can be made.

9. Pressure Gage

a. Performance Check

(1) Remove TI pressure gage and connect to pressure gage tester (A2).

(2) Pump pressure gage tester until 5000 psi is obtained on pressure gage tester.

(3) TI pressure gage will indicate between 4750 and 5250 psi.

(4) Slowly release pressure until 4500 psi is indicated on pressure gage tester. TI pressure gage will indicate between 4275 and 4725 psi.

(5) Repeat (4) above for values listed in table 4.

Table 4. Pressure Gage

Pressure gage tester indications (psi)	Test instrument pressure gage indications (psi)	
	Min	Max
4000	3800	4200
3500	3325	3675
3000	2850	3150
2500	2375	2625
2000	1900	2100
1500[1]	1425	1575
1000[1]	950	1050
500[1]	475	525

[1]Use pressure gage tester weights, piston, and cylinder combination.

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(6) Release all pressure from pressure gage tester and replace TI pressure gage.

b. Adjustments. No adjustments can be made.

10. Flow Gage

a. Performance Check

(1) Connect TI and flow rate meter (A1) to flow source (B4).

NOTE

Flow source must have an in-line fluid filter and clean fluid.

NOTE

Check only those ranges as required by using unit. If unit does not have flow source capable to 50 gpm, use widest range available.

(2) Adjust flow source for an indication of 50 gpm on TI flow gage. Flow rate meter will indicate between 47.5 and 52.5 gpm.

(3) Repeat (2) above for values listed in table 5.

(4) Turn off flow source.

b. Adjustments. No adjustments can be made.

Table 5. Flow Gage

Flow rate indications (gpm)		Test instrument flow gage (gpm)
Min	Max	
38	42	40
28.5	31.5	30
19	21	20
9.5	10.5	10
4.75	5.25	5

11. Final Procedure

a. Deenergize and disconnect all equipment and reinstall protective cover on TI.

b. When all parameters are within tolerance, annotate and affix DA Label 80 (US Army Calibrated Instrument). When the TI receives limited or special calibration, annotate and affix DA Label 163 (US Army Limited or Special Calibration). When the TI cannot be adjusted within tolerance, repair the TI in accordance with the maintenance manual. When repair is delayed for any reason or the TI cannot be repaired with local resources, annotate and affix DA Form 2417 (US Army Calibration System Rejected Instrument) and inform the owner/user accordingly in accordance with TB 750-25-1.

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